46. (New) A method for manufacturing an interconnect structure, the method comprising:

forming a dielectric material over a semiconductor substrate and having a top surface;

forming a recess within the dielectric material extending from the top surface of the dielectric material to the semiconductor substrate;

filling the recess with an electrically conductive material, the recess including:

a first portion having a uniform width and extending within the dielectric material to the top surface of the dielectric material;

a second portion having a height and a uniform width that is less than the width of the first portion and that is not greater then 25% of the height, the second portion extending from the semiconductor substrate to terminate at the first portion.

47. (New) The method as defined in Claim 46, wherein the first portion is a trench having a bottom surface that extends longitudinally parallel to the top surface of the dielectric material, and the second portion is a contact plug.

48. (New) The method as defined in Claim 46, wherein filling the recess with the electrically conductive material further comprises:

forming a diffusion barrier layer in contact with the semiconductor substrate and the dielectric material;

forming a seed layer upon the diffusion barrier layer and composed of a material having a melting point less than that of the material from which the diffusion barrier layer is composed and being selected from a group consisting of ceramics, metallics, and intermetallics;

forming a conductor layer upon the seed layer; and

forming an energy absorbing layer on the conductor layer that is composed of a material having both a higher thermal insulation capacity and electric insulation capacity than that of the material from which the conductor layer is composed.

49. (New) The method as defined in Claim 48, wherein the diffusion barrier layer is upon the top surface of the dielectric material.

50. (New) The method as defined in Claim 48, wherein the diffusion barrier layer is composed of a material selected from the group consisting of aluminum nitride, tungsten nitride, titanium nitride, and tantalum nitride.

51. (New) The method as defined in Claim 48, wherein the seed layer is composed of a material selected from the group consisting of aluminum, titanium nitride, titanium, and titanium aluminide.

52. (New) The method as defined in Claim 48, wherein the conductor layer is composed of a material selected from the group consisting of aluminum and copper.

53. (New) The method as defined in Claim 48, wherein the material from which the energy absorbing layer is composed is selected from the group consisting of titanium, titanium nitride, tungsten, tungsten nitride, silicon nitride, silicon dioxide, tantalum, tantalum nitride, and carbon.

54. (New) A method for manufacturing an interconnect structure, the method comprising:

forming a lower substrate situated on a semiconductor substrate assembly, said lower substrate defining a plane;

forming a dielectric material on the lower substrate having a planar top surface;

forming a recess within said dielectric material, said recess including a contact hole situated below a trench, said contact hole terminating at an end thereof at the lower substrate and terminating at an opposite end thereof at said trench, said contact hole being oriented substantially perpendicular to the plane of said lower substrate, said trench extending from said opposite end of said contact hole to a top surface of said dielectric material, the trench extending substantially parallel to the plane of said lower substrate; and

forming an electrically conductive layer situated within and filling both the contact hole and the trench and extending to terminate above the planar top surface of the dielectric material.

55. (New) The method as defined in Claim 54, wherein forming an electrically conductive layer further comprises:

forming a diffusion barrier layer in contact with the lower substrate and the dielectric material;

forming a seed layer upon the diffusion barrier layer and composed of a material having a melting point less than that of the material from which the diffusion barrier layer is composed and being selected from a group consisting of ceramics, metallics, and intermetallics;

forming a conductor layer upon the seed layer; and

forming an energy absorbing layer on the conductor layer that is composed of a material having both a higher thermal insulation capacity and electric insulation capacity than that of the material from which the conductor layer is composed.

56. (New) The method as defined in Claim 55, wherein the contact hole has a height and a width, and the height is greater than four times the width.

57. (New) A method for manufacturing an interconnect structure, the method comprising:

forming a lower substrate situated on a semiconductor substrate assembly, said lower substrate defining a plane;

forming a dielectric material on the lower substrate having a planar top surface;

forming a recess within said dielectric material, said recess comprising a contact hole situated below a trench, said contact hole terminating at an end thereof at the silicon layer and terminating at an opposite end thereof at said trench, said contact hole being oriented substantially perpendicular to the plane of said lower substrate, said trench extending from said opposite end of said contact hole to a top surface of said dielectric material, the trench extending substantially parallel to the plane said lower substrate;

forming a diffusion barrier layer on the trench and the contact hole;

forming a seed layer on the diffusion barrier layer, the diffusion barrier layer being composed of a material having a melting point greater than or equal to that of a material from which the seed layer is composed; and

forming an electrically conductive layer on the seed layer and extending to terminate at the planar top surface of the dielectric material, the material from which the diffusion barrier layer is composed having a melting point greater than that of a material from which the electrically conductive layer is composed, the material from which the seed layer is composed having a melting point greater than or equal to that of the material from which the electrically conductive layer is composed.

58. (New) The method as defined in Claim 57, wherein the material from which the diffusion barrier layer is substantially composed is selected from the group consisting of aluminum nitride, tungsten nitride, titanium nitride, and tantalum nitride.

59. (New) The method as defined in Claim 57, wherein the material from which the seed layer is substantially composed is selected from the group consisting of aluminum, titanium nitride, titanium, and titanium aluminide.

60. (New) The method as defined in Claim 57, wherein the material from which the electrically conductive layer is substantially composed is selected from the group consisting of aluminum and copper.

61. (New) The method as defined in Claim 57, wherein the contact hole has a height and a width, and the height is greater than four times the width.

62. (New) A method for manufacturing an interconnect structure, the method comprising:

providing a monocrystalline silicon layer of a semiconductor substrate assembly, said monocrystalline silicon layer defining a plane;

forming a dielectric material on the monocrystalline silicon layer;

forming a recess within said dielectric material, said recess comprising a contact hole situated below a trench, said contact hole terminating at an end thereof at the silicon layer and terminating at an opposite end thereof at said trench, said contact hole being oriented perpendicular to the plane of said monocrystalline silicon layer, said trench extending from said opposite end of said contact hole to a top surface of said dielectric material, the trench extending parallel to the plane of said monocrystalline silicon layer;

forming a diffusion barrier layer on the trench and the contact hole, the diffusion barrier layer being composed of a material selected from the group consisting of aluminum nitride, tungsten nitride, titanium nitride, and tantalum nitride;

forming a seed layer on the diffusion barrier layer, the seed layer being composed of a material selected from the group consisting of aluminum, titanium nitride, titanium, and titanium aluminide, the material from which the diffusion barrier layer is composed having a melting point greater than or equal to that of the material from which the seed layer is composed; and

forming an electrically conductive layer on the seed layer and extending to terminate at the planar surface of the dielectric material, the material from which the diffusion barrier layer is composed having a melting point greater than that of the material from which the electrically conductive layer is composed, the material from which the seed layer is composed having a melting point greater than or equal to that of the material from which the electrically conductive layer is composed, the material from which the electrically conductive layer is composed being selected from the group consisting of aluminum and copper.

63. (New) The method as recited in Claim 62, wherein the contact hole has an aspect ratio greater than about 4 to 1.